

AMENDMENT UNDER 37 C.F.R. § 1.111

Application No.: 10/725,327

Atty Docket No.: Q78609

REMARKS

The Office Action of June 8, 2004 has been received and its contents carefully considered.

Claims 1 to 19 are all the claims pending in the application, prior to the present amendment.

Claim 16 has been objected to because the word "particle" in line 2, should be --particles--.

In response, applicants have amended claim 16 in the manner suggested by the Examiner.

In addition, applicants have amended claim 18 to correct a typographical error.

Claims 1-18 have been rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-7, 10, 12-16, 18 & 19 of U.S. Patent No. 6,683,023 to Ito et al.

The '023 Patent issued from the parent application of the present application.

In response, applicants enclose herewith a Submission of Terminal Disclaimer with the appropriate fee and an executed Terminal Disclaimer.

In view of the above, applicants request withdrawal of this rejection.

Claims 1 to 18 have been rejected under 35 U.S.C. § 102(e) as anticipated by U.S. Patent No. 6,090,736 to Taoda et al.

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Applicants submit that Taoda et al do not disclose or render obvious the presently claimed invention and, accordingly, request withdrawal of this rejection.

The present direction as set forth in claim 1 is directed to a photocatalytic powder comprising titanium dioxide fine particles comprising an anionically active substance, wherein the fine particles have an electrokinetic potential of from about -100 mV to -10 mV in an aqueous environment at pH 5, and wherein the titanium dioxide fine particles are obtained by a vapor phase reaction or a wet-hydrolyzing.

The present direction as set forth in claim 2 is directed to a photocatalytic powder comprising titanium dioxide fine particles comprising an anionically active substance, wherein the fine particles have an electrokinetic potential of from about -100 mV to -10 mV in an aqueous environment at pH 5, and wherein the crystal form of the titanium dioxide fine particles is anatase and/or brookite.

In the present invention, the titanium dioxide fine particles can be in any of the following states: the titanium dioxide fine particles contain an anionically active substance which is present in the vicinity of the surface of the fine particles, or an anionically active substance is adsorbed to the surface of a titanium dioxide fine particle, or an anionically active substance is present in the vicinity of the surface of titanium dioxide. See page 6, lines 13-17 of the present specification.

Accordingly, the present invention provides a photocatalytic powder and a photocatalytic slurry, which can exhibit not only excellent photocatalytic activity and durability, but also

dispersion stability when coated on the surface of fiber, paper or plastic material, kneaded into such a material, or used for a coating composition. See page 3, lines 25-29 of the present specification.

On the other hand, Taoda et al '736 is directed to a photocatalytic powder comprised of finely divided titanium dioxide particles having a coating of porous calcium phosphate formed on at least part of the surface of each finely divided titanium dioxide particle, wherein an anionic surface active agent is present at least on the interface between the porous calcium phosphate coating and the finely divided titanium dioxide particle.

Taoda et al '736 is silent on the dispersion stability when the powder is coated on the surface of fiber, paper or plastic material, kneaded into such a material, or used for a coating composition. Taoda et al '736 only disclose that when the powder is supported on an organic polymer medium, the durability of the organic polymer medium is improved. See column 3, lines 4-11 of Taoda et al '736.

In Taoda et al '736, most of the anionic surface active agent must be present on the interface between the calcium phosphate and the finely divided titanium dioxide particle, because the anionic surface active agent improves the adhesive force of the porous calcium phosphate coating to the titanium dioxide particle. See column 4, lines 43-53 of Taoda et al '736.

Accordingly, Taoda et al '736 do not indicate a control of the electrokinetic potential on the fine particles. As a result, the dispersion stability can not be resolved.

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From the above facts, it can be understood that the surface of the calcium phosphate coated fine particles in Taoda et al '736 is different from the surface of the fine particles of the present invention, because in the present invention most of the anionic active substance is present on the surface of the particles, whereas in Taoda et al '736 most of the anionic active substance must be present on the interface that exists between the calcium phosphate coating and the finely divided titanium dioxide particles.

That is to say, the interfacial potential of the powder in Taoda et al '736 is outside of the claimed range in the present invention.

In view of the above, applicants submit that Taoda et al '736 do not defeat the patentability of claims 1 to 19 and, accordingly, request withdrawal of this rejection.

Claim 19 has been rejected under 35 U.S.C. § 103(a) as obvious over Taoda et al '736 in view of Suzuki et al.

The Examiner states that Taoda et al '736 disclose a photocatalytic powder as described above except for the presence of activated carbon and/or zeolite. The Examiner relies on the Suzuki et al patent to supply the teachings of the use of activated carbon with titanium dioxide fine particles.

Claim 19 is a dependent claim that depends ultimately from claim 1 or 2. Accordingly, applicants submit that claim 19 is patentable for the reasons discussed above in connection with the rejection of claims 1 and/or 2.

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In view of the above, please let us have your comments and instructions for responding to this rejection.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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